

## PROTON CONDUCTING POLYMER MEMBRANES

### Abstract of the Disclosure

Proton conducting membranes having improved resistance to methanol crossover are provided, along with methods for their manufacture. In a preferred embodiment, the polymeric membranes are formed by (a) dissolving a polymer, preferably a polyphosphazene, in an organic solvent to form a polymer solution; (b) adding an oxyacid to the polymer solution; (c) optionally, adding water to the polymer solution, preferably in a molar ratio equivalent to the oxyacid; (d) optionally, concentrating the polymer solution; (e) casting the polymer solution on a casting surface, such as one formed of or coated with TEFLON™; and (f) removing the organic solvent, so as to form the polymeric membrane. A particularly useful application for these polymeric membranes is in fuel cells, such as those wherein methanol and oxygen are converted into electrical energy.

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